

REMARKS

Applicant has carefully reviewed the Office Action mailed October 12, 2006 and offers the following remarks to accompany the above amendments.

Claims 19-28 are pending in the present application. Claims 1-18 were previously cancelled. Claims 29-38 were previously withdrawn. No claims are cancelled by this amendment. Claims 39-43 are added. Accordingly, claims 19-28 and 39-43 are pending.

Claims 1-28 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Patent Office opined that the term “non-stationary exercise” is not disclosed within the Specification. Claims 19, 22, and 26 have been amended to remove the term “non-stationary.” Accordingly, the rejection of claims 1-28 under 35 U.S.C. § 112, first paragraph should be withdrawn.

Claims 19-21, 27, and 28 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,997,482 to Vaschillo et al. (hereinafter “Vaschillo”) or, in the alternative, were rejected under 35 U.S.C. § 103(a) as being obvious over Vaschillo in view of U.S. Patent No. 6,644,976 to Kullok (hereinafter “Kullok”). Applicant respectfully traverses.

For the Patent Office to prove anticipation, each and every element of the reference must be present in the reference. Furthermore, the elements of the reference must be arranged as claimed. MPEP § 2131. For the Patent Office to combine references in an obviousness rejection, the Patent Office must do two things. First, the Patent Office must establish *prima facie* obviousness by showing where each and every element is taught or suggested in the combined references. MPEP § 2143.03. Second, the Patent Office must state a motivation to combine the references. The motivation must be supported with actual evidence which cannot come from Applicant’s disclosure. *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999).

Prior to addressing the merits of the rejections, Applicant offers the following summary of the present invention as claimed. The present invention provides for detecting stability of a heart rate variability cycle of a person during exercise. In response to detecting stability of the heart rate variability cycle, the exerciser is provided with a number of signals to assist the exerciser in achieving coherence of his/her respiratory cycle with his/her heart rate variability cycle and to synchronize his/her exercise movements with his/her coherent respiratory and heart rate variability cycles. These signals include a signal indicating when to inhale, a signal indicating when to exhale, and a signal indicating when to move body parts during the exercise.

The present invention also detects transitions from one level of exercise to another level of exercise and provides the signals to the exerciser when his/her heart rate variability cycle has stabilized at the new exercise level.

In contrast, the system of Vashchillo monitors the heart rate variability cycle and the respiratory cycles of a person and provides a single reference signal indicative of the phase shift between the two cycles to the person. The person is instructed to breathe according to the single phase shift reference signal. The person is then responsible for comparing the two signals and determining whether to breathe faster or slower to align the heart rate variability cycle and the respiratory cycle to achieve resonance or zero phase shift. The person is not provided with a first signal indicative of when to inhale and is not provided with a second signal indicative of when to exhale. As such, a person using the system of Vashchillo must continually interpret the graphical data to attempt to determine when to increase or decrease breathing. Additionally, the system of Vashchillo does not provide any signal indicative of when to move body parts during exercise and does not determine stability of an average heartbeat rate for the heart rate variability cycle.

The system of Kullok monitors a physiological activity of a patient, such as the heart rate, and provides a signal to the patient indicating when the patient is to perform a motor activity, such as blinking the eyes or gripping the fist. This signal is intentionally varied relative to the physiological activity so that the patient cannot predict when the signaling will occur. As such, the system of Kullok does not provide a tempo signal or any signal to allow a patient to synchronize his/her movements with his/her physiological activity. Kullok teaches waiting approximately one half ($1/2$) of a minute (approximately 27 heart beats) before beginning to signal the patient and randomly varies the start time so that the patient cannot predict when to begin, yet admits that it will take as much as 2 minutes for a patient's heart rate to stabilize after a change in activity level. As such, the system of Kullok does not determine when an average heartbeat rate of the patient's heart rate variability cycle is stable before providing movement signals to the patient.

Claim 19 has been amended to recite, among other things, determining whether an average heartbeat rate of a heart rate variability cycle, which is a rate at which the heartbeat changes during a first level of exercise, is stable. In response to determining that the average heartbeat rate of the first heart rate variability cycle is stable, positive and negative heartbeat rate

peaks of the heart rate variability cycle are detected and signaling is provided to the exerciser indicative of when to inhale and exhale.

Neither the system of Vaschillo nor a combination of the system of Vaschillo with the system of Kullok provides for determining stability of an average heartbeat rate of a heart rate variability cycle. Additionally, neither the system of Vaschillo nor a combination of the system of Vaschillo with the system of Kullok provides signaling to the exerciser in response to determining that the average heartbeat rate of a heart rate variability cycle is stable. Furthermore, neither system alone or in combination provides a first signal indicating when the exerciser should inhale and a second signal indicating when the exerciser should exhale. Furthermore, there is no combination within Vaschillo, Kullok, or the art generally that suggests or provides a motivation to combine the references. Accordingly, claim 19 is not anticipated by Vaschillo and is not obvious over Vaschillo in view of Kullok for at least these reasons and the rejection of claim 19 should be withdrawn. Claims 20, 21, 27, and 28 depend, either directly or indirectly, from claim 19. As such, the rejections of claims 20, 21, 27, and 28 should be withdrawn for at least the same reasons. Accordingly, for at least the reasons discussed above, Applicant respectfully submits that claims 19-21, 27, and 28 are in condition for allowance and notice of the same is requested at the earliest possible date.

Additionally, the Patent Office has asserted that Kullok teaches promoting synergy between movement and physiological activity. (See Office Action mailed October 12, 2006, p. 5). However, Kullok actually teaches randomizing the signaling so that the patient cannot predict when action will be signaled. As such, Kullok does not teach promoting synergy between movement and physiological activity as asserted by the Patent Office.

Furthermore, the Patent Office admits that the system of Vaschillo does not teach instructing the subject to obtain a stable heart rate variability before beginning exercise, does not teach an exercise tempo signal based upon the heart rate variability, and does not teach disabling the inhale/exhale signals when transitioning from a first tempo to a second tempo. (See Office Action mailed October 12, 2006, p. 5).

The Patent Office then asserts that Kullok teaches these elements. However, as discussed above, Kullok teaches that it takes approximately 2 minutes for a heart rate to stabilize after a change in activity level, yet waits only one half (1/2) of a minute (approximately 27 heart beats) before beginning to signal the patient and randomly varies the start time so that the patient

cannot predict when to begin. (See Kullok, col. 44, lines 2-4; and col. 44, lines 25-29). The system of Kullok utilizes a quasi-random function to perform the variations. (See Kullok, col. 44, lines 22-25). As such, the system of Kullok does not teach instructing the subject to obtain a stable heart rate variability before beginning exercise, does not teach an exercise tempo signal based upon the heart rate variability, and does not teach disabling the inhale/exhale signals when transitioning from a first tempo to a second tempo as asserted by the Patent Office. Accordingly, claims 19, 21, 27, and 28 are allowable for at least these additional reasons.

Claims 22-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Vaschillo in view of Kullok. Applicant respectfully traverses. The standards for obviousness are set forth above. Claims 22-26 depend, either directly or indirectly, from claim 19. As such, the rejections of claims 22-26 should be withdrawn for at least the same reasons as claim 19. Applicant reserves the right to make further arguments in the future against a combination of Vaschillo with Kullok. Applicant respectfully submits that claims 22-26 are in condition for allowance and notice of the same is requested at the earliest possible date.

Claims 39-43 have been added. No new subject matter is added by these amendments. Claims 39-43 include subject matter that can be found within the present Application. (See Specification, p. 4, lines 21-28; p. 5, line 22 through p. 6, line 18; p. 7, lines 1-5; and p. 8, lines 28-32). Claims 39-43 depend, either directly or indirectly, from independent claim 19, which is now in condition for allowance based upon the arguments presented above. Applicant respectfully submits that claims 39-43 are in condition for allowance for at least the same reasons and requests notice of the same at the earliest possible date.

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

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